U.S. Department
of Transportation
Federal Highway Administration

400 Seventh St., S.W.
Washington, D.C. 20590

Refer to: HVH-1

JUL 25 1995

Mr. William Caton
The Secretary
Federal Communications Commission
Washington, D.C. 20554

RE: Petition for Rulemaking (RM-8648) by Apple Computer, "Allocation of Spectrum in the 5 GHz Band to Establish a Wireless Component of the National Information Infrastructure"

Dear Mr. Caton:

The Federal Highway Administration (FHWA) has reviewed the above noted Petition for Rulemaking filed by Apple Computer, Inc. (Apple). We understand that the final date for comments thereon is July 25, 1995. FHWA therefore wishes to bring to the Federal Communication Commission's (FCC or Commission) attention in this proceeding relevant materials recently submitted to the FCC. By letter dated June 9, 1995, FHWA's Intelligent Transportation Systems Joint Program Office submitted material to the Federal Communications Commission regarding the National Telecommunications and Information Administration's (NTIA) consideration of allocating the 5850 MHz to 5925 MHz band to civilian use. In brief, the FHWA anticipates that this band would be suitable for ITS technologies associated with vehicle-to-roadside communication (e.g., automated toll collection) and we support its allocation for that purpose. However, the band overlaps with the 5725 to 5875 band outlined in the Apple Petition for creation of a new band for high capacity, unlicensed wireless data.

We are, accordingly, resubmitting our June 9 letter and supporting background material for consideration by the FCC as part of its deliberations on Apple's petition. We would of course welcome the opportunity to discuss this matter with the Commission's staff. If you have any questions, please contact Beverly Russell at 202-366-2202 on policy issues or Frank Mammano at 703-285-2405 on technical issues.

Sincerely yours,

Christine M. Johnson
Director, Intelligent Transportation
Systems Joint Program Office

Enclosure

U.S. Department
of Transportation

**Federal Highway
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

Refer to: HVH-1

JUN - 9 1995

Mr. William Caton
The Secretary
Federal Communications Commission
Washington, D.C. 20554

Re: Intelligent Transportation Systems (ITS)
Spectrum Support in the 5850-5925 Band

Dear Mr. Caton:

The Federal Highway Administration (FHWA) has played a key role in researching and testing technologies and services associated with the National Intelligent Transportation Systems (ITS) Program. The goal of the ITS Program is to apply advanced technology to improve travel and safety on our Nation's roadway system. One of the FHWA's areas of interest is the standardization of radio frequencies used for ITS radio communications so that system interoperability across the North American Continent is assured.

We understand that the National Telecommunications and Information Administration (NTIA) is considering allocation of the 5850 to 5925 band to civil uses. We are requesting that the NTIA do so with a recommendation to the Federal Communications Commission (FCC) that ITS be considered when making decisions as to future applications in this portion of the spectrum. Enclosed is the paper, *An Overview of Spectrum Needs in the 5850-5925 Band by the Intelligent Transportation Systems (ITS) Program*, which is being forwarded to the NTIA's Independent Radio Advisory Committee for review and consideration.

We would welcome the opportunity to discuss this issue with FCC representatives. Should you have any questions or comments regarding this submittal, please contact Ms. Beverly Russell at 202 366-2202 on policy issues or Mr. Frank Mammano at 703 285-2405 on technical issues.

Sincerely yours,

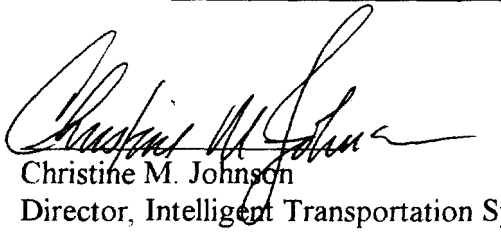
Christine M. Johnson
Director, Intelligent Transportation
Systems Joint Program Office

Enclosure

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

In the Matter of:	)
	)
Intelligent Transportation Systems (ITS)	)
Spectrum Support in the 5850-5925 Band	)

COMMENTS OF THE FEDERAL HIGHWAY ADMINISTRATION



Christine M. Johnson
Director, Intelligent Transportation Systems
Joint Program Office

Federal Highway Administration

Department of Transportation
400 Seventh Street, S.W.
Washington, D.C. 20590

An Overview of Spectrum Needs in the 5850-5925 Band
by the
Intelligent Transportation Systems (ITS) Program

The Intelligent Transportation Systems (ITS) program (formerly called Intelligent Vehicle Highway Systems - IVHS) is managed by the ITS Joint Program Office within the Department of Transportation. Its goals are to reduce traffic congestion, improve highway safety and air quality, increase the use of mass transit and foster a healthy ITS technology and manufacturing base in the United States. To meet the goals, the program seeks to apply advanced communications and computer technologies to provide real-time information to vehicle operators, transit riders, and trip planners.

Since ITS is basically a mobile information utility, any practical system architecture must include radio communications to provide the connection between fixed infrastructure and data sources and moving vehicles. To the maximum extent possible, ITS will use existing and planned commercial services like cellular, personal communications systems, and FM subcarriers. However, there are still some user services in the area of safety and warning systems where access/availability and nationwide interoperability considerations demonstrate a need for dedicated systems.

Most of the needs of the user services in the safety and warning category can be met with relatively short-range radio systems. Information will be exchanged between the roadside and vehicles using low-power systems and directional antennas. In order to be able to send significant amounts of digital information quickly (because the vehicles' motion limits the amount of time that is available) the bandwidth required by each transceiver is expected to be several MHz. Analyses of the spectrum requirements have shown that about 25 MHz will be needed for these services. This amount of bandwidth is not readily obtainable in the portions of the spectrum where land mobile communications normally are accommodated.

In addition to safety and warning systems, more spectrum is needed to sustain current growth in the deployment of electronic toll collection and traffic management (ETTM) devices. These "radio frequency tags" are used for a wide range of ITS functions, especially in connection with commercial vehicle operations. Like the data communication equipment discussed above, these are inherently short-range, low-power systems. These devices currently operate under the "Location and Monitoring System" (LMS) allotment in Part 90 of the FCC Rules and Regulations, in the 902-928 MHz band. There have already been instances where insufficient spectrum is available in this band to support interference-free deployments of LMS in major urban areas and with the introduction of more ITS services, this problem will rapidly reach the point where it will be a major

barrier to the program. These LMS applications within the ITS program are projected to require another 50 MHz of spectrum.

In order to reduce the cost and complexity of the in-vehicle communications equipment to the "consumer" level (it is likely that this equipment will eventually be standard on all vehicles), it is essential that all of the services discussed above be provided by a single transceiver in the same frequency band. An examination of the allocation tables quickly reveals that the first place where 75 MHz of continuous bandwidth may be available in the near term is between 5850 and 5925 MHz. Current U.S. allocations in the band [Government RADIOLOCATION and FIXED-SATELLITE (Earth to Space), along with a secondary allocation to Amateur] are very compatible with the proposed ITS. Again, the ITS applications are low-power and short-range with directional antennas. Experience in other bands (e.g., sharing between common carrier microwave and geostationary satellite earth stations in the 4 and 6 GHz bands) has shown that spectrum sharing is possible in these circumstances.

A consensus has been reached among the government and industry partners in the ITS program that the 5850-5925 MHz band is a good choice for short-range ITS communications systems. The huge market for systems that will accompany ITS deployment will drive down the cost of the semiconductor technology that operates at these frequencies, which will benefit all users of the band.

Respectfully yours,

Christine M. Johnson, Director
Intelligent Transportation Systems
Joint Program Office